Obstetrics

Hypertensive disorders of Pregnancy

A. Pre-Eclampsia

- Defination: ≥20weeks, BP≥140/90mmhg with proteinuria and/or end organ damage
- Pathophysiology
  - Absent Vascular Remodelling → Uteroplacental insufficiency & placental ischemia (Release of SFLT-1 & Seng and decrease in VEGF & PLGF- Markers of Preeclampsia)
  - Genetic predisposition: Family h/o pre-eclampsia
  - Immune mediated- Altered immune response to paternal antigens.
- High Risk patients (Give Low dose Aspirin for Prophylaxis throughout the pregnancy):
  - Previous H/O Preeclampsia
  - DM with vasculopathy
  - CKD
  - APLA, SLE
  - Multifetal pregnancy
  - Chronic Hypertension
- Management
  - POG ≥37 weeks
    - Delivery (preferred- Vaginal Delivery)
    - Antihypertensives if BP ≥150/100 consistently (DOC: Labetalol)
  - POG < 37 weeks
    - Uncontrolled Hypertension → DELIVER
    - Controlled BP on antihypertensives→ EXPECTANT MANAGEMENT Maternal monitoring with laboratory follow up twice a week and BP monitoring twice a day. Antihypertensives if BP>= 150/100 twice 15 mins apart. Fetal monitoring → STEROIDS for lung maturation only if < 34 weeks. (DOC- LABETALOL)
- **Pre-eclampsia with severe features:** BP ≥ 160/110 with/without end organ damage
  - POG ≥ 34 weeks: Delivery + Antihypertensives (if BP≥160/110 then give I.V. Labetalol; 2nd line therapy: HYDRALAZINE) + Prophylactic MgSO4
  - POG < 34 weeks:
    - Uncontrolled, hypertension, maternal shock, Non reassuring FHR, Impending eclampsia, HELLP SYNDROME, Abruption, pulmonary edema, renal failure, IUGR with OLIGO → Delivery + Antihypertensives + Prophylactic MgSO4
    - If with stable BP and stable fetus and none of the above → Conservative management till 34 weeks: maternal monitoring with laboratory follow up, alternate day and BP monitoring twice a day, antihypertensives if BP>= 150/100 twice 15mins apart; fetal monitoring- STEROIDS for lung maturation
- **With Tonic-Clonic Seizures:**
  - Eclampsia: d/t Cerebral Hypoxia and Cerebral Edema

- Definite Treatment is DELIVERY
- Prevention of maternal trauma – stabilize the position of the mother
- Prevention of maternal Hypoxia- Safe airway by putting mouth-gag
- Antihypertensive therapy
- Prevention of recurrent seizures: DOC- MgSO4 – Pritchard regime
  - LOADING DOSE 14GM: 4GM 20% I/V (with maximum rate of 1Gm/min) and with HR monitoring AND 10GM 50% I/M
  - before maintenance dose check
    PATELLAR REFLEX has to be present
    RESPIRATORY RATE has to be > 12/min
    URINE OUTPUT has to be >100mL/hr
  - Maintenance Dose: give 5gm i/m every 4 hourly for maintenance
  - Therapeutic levels of 4-7 mEq
  - 1st sign of Mg Toxicity is loss of DTR which as lost at level of 10 mEq

B. Gestational Hypertension

- Definition: ≥ 20 weeks POG with BP ≥ 140/90mmHg and no proteinuria and/or end organ damage
- Management:
  - ≥ 37 weeks POG: Delivery
  - <37 weeks POG :
    - If BP is ≥ 160/110 mmHg then treat as pre-eclampsia with severe features
    - Otherwise Expectant management: Maternal and fetal monitoring; antihypertensives only indicated if BP ≥ 150/100 mmHg consistently

C. Chronic HTN

- Definition: Hypertension <20 weeks POG or >12 weeks postpartum
- Management:
  - DELIVER at 39 weeks in well controlled cases
  - If patient develops new onset proteinuria or end organ damage or uncontrolled HTN ≥ 20 weeks POG → Classify as **Chronic HTN with Superimposed Pre-eclampsia** and manage as a case of pre-eclampsia.

Q. A 20 year old G1 at 32 weeks presents for her routine visit. She is noticed to have a BP of 150/96 mmHg and her urine dip shows 2+ protein. She complains of a constant headache and vision changes that are not relieved with rest or pain reliever. The patient is sent to the hospital for further management. At the hospital, her BP was 158/98 mmHg and she is noted to have tonic clonic seizures. Which of the following Is indicated **next in the management** of this patient?

a. Low Dose aspirin
b. Antihypertensive therapy
c. Magnesium sulphate
d. Caesarean section

Liver diseases in pregnancy

A. 3rd trimester → HELLP Syndrome

- Clinical Feature: Pain in the epigastrium or RUQ. May have nausea, vomiting, malaise, hypertension and proteinuria in 85% patients.
- Diagnosis: ALL 3 Criteria are required to be met- TENNESSEE CRITERIA
  - H→ Hemolysis: Any 2 of the following-
    - Smear shows schistocytes
    - Serum Bilirubin ≥ 1.2
    - Low S. Haptoglobin or High S. LDH
    - Severe anemia of unknown origin
  - EL → Elevated Liver enzymes – ALT/AST more than twice than the normal value
  - LP → Low Platelets – Less than 1 Lakh count
- **Management:**
  - Absolute management: Termination of Pregnancy after maternal stabilization
  - Prophylactic MgSO4
  - Antihypertensives
  - If POG < 34 weeks, stabilize mother and the fetus and deliver after steroid administration
- Recurrence rate: 4-7 %

B. 3rd trimester → Acute Fatty Liver of Pregnancy (AFLP)

- Clinical Feature: Abdominal Pain, Nausea, Vomiting with features of Acute Liver Failure such as Hypoglycaemia, Coagulopathy and Encephalopathy (High Mortality Rate)
- Diagnosis:
  - Liver Enzymes elevated upto 5-10 times of normal
  - Elevated Ammonia
  - Decreased Glucose (HYPOGLYCEMIA)
  - Decreased fibrinogen/ platelets/ antithrombin
  - Prolonged PT/ aPTT
- Management: Termination of Pregnancy
- Risk factors:
  - Multifetal pregnancy
  - H/O AFLP
  - Male sex of the fetus
  - 50% patients may also have HTN

C. 3rd trimester → Obstetric Cholestasis

- Clinical Feature: Pruritis (Cardinal Symptom), Nausea, Poor appetite
- Diagnosis:

- Elevated serum Bile Acids
- D. Bil and T. Bil are raised- rarely exceed 5 mg/dl
- Increased transaminases

- Management: Termination of Pregnancy at ≥ 37 weeks + Ursodeoxycholic acid to the mother (also improves fetal prognosis)
- More dangerous of the fetus because of the risk of:
  - RDS
  - MAS
  - IUD
- Recurrence rate: 60-70 %

D. 1st trimester → Hyperemesis Gravidarum

- Clinical Feature: Start around 6 weeks, peaks at 9-10 weeks, subsides by 16 weeks
- Causes: Symptoms mainly linked to HCG in blood, also attributed to Estrogen/Progesterone levels. Also said to be a/w H. pylori infection.
- Diagnosis: Persistent Nausea and Vomiting- causing weight loss and ketonuria
- Lab Parameters:
  - Liver abnormalities
  - Thyroid dysfunction
  - Electrolyte imbalance
    - HYPOKALEMIA
    - Elevated S. Amylase and S. Lipase
    - Metabolic Alkalosis
    - Thiamine deficiency (can cause Wenicke's Encephalopathy)
- Management:
  - Make patient NPO
  - Correct Hypovolemia
  - Correct Electrolyte imbalance
  - Replace Vitamins (thiamine)
  - IV ONDANSETRON
- For normal Nausea/vomiting of pregnancy you give → Pyridoxine + Doxylamine

E. Any trimester → Hepatitis

- COURSE OF HEPATITIS A ,B AND C IS SAME AS IN NON PREGNANT WOMEN BUT HEP E CAN LEAD TO ACUTE LIVER FAILURE
- In Acute Viral Hepatitis- patient has constitutional symptoms like fever
- Lab Parameters:
  - Liver enzymes are >25 time the normal levels
  - Bilirubin >10 mg/dl
- Management: Supportive. If mother remains HBsAg +ve OR has detectable HBV DNA infant should receive HBIG in addition to Hep B Vaccine.

BLEEDING IN PREGNANCY

A. BLEEDING BEFORE 20 WEEKS

1. H/O Expulsion of products present → Do Per Speculum Examination

- Os dilated, products seen in cervical canal: Dx of INCOMPLETE ABORTION; Managed by suction and evacuation
- Os closed → do USG → If no I/U Pregnancy seen on USG: Dx of COMPLETE ABORTION; Managed by following up with HcG

2. H/O Expulsion of products absent → Do Per Speculum Examination

- Os is dilated → do USG → I/U Pregnancy seen on USG → Dx: Inevitable Abortion, Mx: wait and watch for spontaneous expulsion or give prostaglandins (misoprostol) to fasten the process.
- Os is closed → do USG →
  - I/U pregnancy is seen:

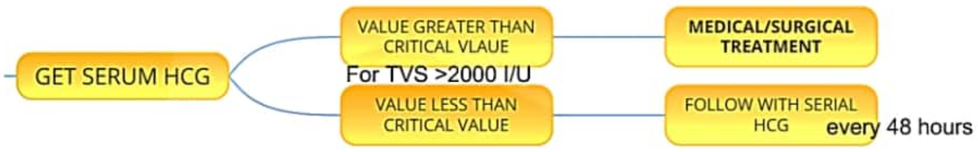
  - If Snowstorm appearance is seen and there is no fetus seen on USG:

SNOWSTORM APPEARANCE SEEN NO FETUS SEEN ON USG
COMPLETE MOLE
GET SERUM HCG LEVELS AND PLAN SUCTION EVACUATION
FOLLOW UP WITH WEEKLY SERUM HCG

    - M/C presentation of Molar Pregnancy is Bleeding PV
    - Karyotype of 46 XX/ Diploid/Monospermic 90 %
    - C/F- Fundal Height > POG
    - USG may also show theca lutein cyst (not seen in partial moles)
    - May also present with medical complication such as (not seen in partial moles)
      - Pulmonary Embolism
      - Thyroid Storm
      - Early onset of Preeclampsia
    - Follow with S. HCG till it becomes normal for 3 consecutive months and then do the follow of monthly till 6 months.
    - Contraception of choice: Combined OCP's
  - If local causes can be seen (like Ectropion) → No Mx required
  - If No I/U pregnancy can be seen on USG: Consider ECTOPIC Pregnancy

a) If Extrauterine sac is seen with embryo or yolk sac → Ectopic is confirmed → Manage medically and surgically as per protocol

b) If a Complex Adnexal mass is seen with or without the RING OF FIRE sign → do S. HCG



c) if B/L Adnexa are also normal → Get Serial HCG done (every 48 hours)

d) if there is evidence of intraperitoneal bleed such as guarding or rigidity → mark it as RUPTURED ECTOPIC which is always managed surgically (SALPINGECTOMY) NO Salpingotomy

B. BLEEDING AFTER 20 WEEKS → 5 possible differentials:

1. Placenta Previa:

- Risk Factors:
  - Previous Placenta Previa
  - Previous Caesarean Section
  - Multiparity
  - Multifetal pregnancy
  - Increasing maternal age
  - Smoking (Smoking is protective for pre-eclampsia)
- Dx: No PV, No P/S – only USG (TAS) to be done which shows Placenta in the LUS, and after which a TVS must also be done to confirm.
  - So IOC for PP is TVS
- C/F: Painless bleeding, Previous small bleeding episodes, Uterus relaxed and nontender, Malpresentations can be present
- Management
  - If patient is Hemodynamically unstable- Expedite delivery by an EMERGENCY CS (under General Anesthesia); Resuscitate and transfuse blood & blood products
  - If patient is Hemodynamically stable-
    - But POG is > 37 weeks OR patient has a dead baby OR continued bleeding OR Active labour OR Non-Assuring FHR – do EMERGENCY CS
    - If none of these is present and POG <37 weeks – Conservative management done by
      - JHONSON'S MCCAFEE REGIMEN till 34 weeks
        - Correction of Anemia

- Fetal monitoring
- Steroid if POG <34 weeks
- Tocolytics if POG <34 weeks and contractions present

- Thereafter a CS should be done
- Exception for CS: Low lying Placenta, which is within 2 cm of internal os, where a vaginal delivery is done.

2. Abruption

- Dx: NO P/S or P/V. Only USG to be done which will reveal Retroplacental clot
- Risk Factors:
  - Pre-eclampsia
  - Trauma to abdomen
  - Previous H/o abruption (highest risk)
  - Multiparity
  - Increasing maternal age
  - Smoking
- C/F: Bleeding WITH PAIN, Uterine tenderness, Increased basal tone, Fetal distress, Fundal height more than the POG
- Mx:
  - If mother is hemodynamically unstable:
    - Expedite Delivery by Emergency CS
    - Resuscitate Blood and blood products
  - If mother is hemodynamically stable:
    - If fetus has non-reassuring FHR → Expedite Delivery by Emergency CS
    - If fetus is stable:
      - If POG ≥ 34 weeks → Vaginal delivery
      - If POG <34 weeks with ongoing bleeding/coagulopathy (d/t release of tissue thromboplastin from decidua) → Vaginal Delivery
      - If POG < 34 weeks but no ongoing bleeding/coagulopathy→ conservative management with steroids ± Tocolytics

3. Vasa Previa

- Dx: No P/S or P/V; only do USG → Vessels crossing over internal os
- Risk Factors:
  - Multifetal pregnancy
  - Velamentous cord
  - Placenta previa
  - Succenturiate lobe
- C/F: Bleeding at the time of membrane rupture a/w severe fetal distress
- Mx: Emergency CS as risk of fetal exsanguination

4. Bloody Show

- A/w Labour, small amount of blood mixed with cervical mucus
- Rule out placenta previa, abruption, vasa previa
- Dx: Per speculum and PV examination

5. Uterine Rupture

- Rare Dx. Suspect when patient has a h/o CS or an obstructed labour
- C/F: Loss of uterine contour, stoppage of uterine contractions, and severe fetal distress
- Mx: Emergency Laprotomy

Approach to abnormalities of Liquor

POLYHYDRAMNIOS

A. Fetal Structural abnormalities

- Decreased Swallowing d/t GIT, Neuromuscular abnormalities
  - GIT- Duodenal atresia, Diaphragmatic hernia, Anencephaly
  - Anencephaly
    - Earliest diagnosed at 10 weeks, best at 14 weeks
    - Female fetus
    - Post term labour because of no HP axis in fetus
    - Recurrence rate is 4% after 1 previous history and 10% after two previous history of anencephaly
    - Treatment is FA is 4 mg from 3 months before to 3 months after conception.

B. Aneupoloidy

- Trisomy 18 – Polyhydramnios + IUGR: All HCG, Inhibin, AFP, U3E DECREASE
- Trisomy 21 – Duodenal atresia
  - Screening by increase of HCG & Inhibin A, and decrease of AFP & UE3 (QUADRUPLE TEST)- done in 2nd trimester
  - PAPPA also decreases in 1st trimester
  - Dual Test: HCG & PAPPA doen in 1st trimester
  - Triple Test: HCG + AFP +U3E
  - Quadruple test is most sensitive and specific
  - NIPT: Non Invasive Prenatal Test (aka Cell Free DNA Test) can be done anytime beyond 10 weeks. Currently- Secondary screening test. Can pick of only some chromosomal abnormalities such as 13, 18, 21 or monosomy X.
  - Combined Test – Dual test + USG for nuchal translucency. Best done between 11 weeks and 13 weeks 6 days.
  - Confirmation-
    - CVS in 1st trimester

- Amniocentesis in 2nd trimester

C. Fetal- High Cardiac Output State

- Anemia- Hydrops Fetalis
  - Polyuria- compensatory mechanism
  - PARVOVIRUS B19
    - Virus is cytotoxic to RBCs
    - Aka Fifth Disease
    - Slapped Cheek- appearance of the baby
    - Childhood disease

  - Rh Alloimmunization
    - Dx: Critical Titre ≥ 1:16 or ICT ≥ 1 : 16 → MCA Doppler PSV ≥1.5Mom
    - If ICT is < 1:16 then keep repeating ICT 4 weekly
    - If ICT is negative → Anti D prophylaxis (Best Time: 28 weeks) 300 mcg IM, repeated again after delivery.

D. Twin-Twin transfusion syndrome

- Acute Polyhydramnios in 2nd trimester
- Use Deep Vertical Pocket (DVP) as a measurement as AFI can't be used.
- Monochorionic Twins
  - Dx: USG → Simultaneous Polyhydramnios in one baby and Oligohydramnios in another.
  - Types
    - MCDA – Cell division at Day 4 to Day 8
    - MCMA- Cell division at Day 8 to Day 12 (M/C type of twins: DCDA; M/C type of MZ twin: MCDA)
  - If only one baby has Polyhydramnios and the other is normal, then think of… (MCA Doppler: Anemia >1.5 Mom in one, Polycythemia <0.8 Mom in other
    - TAPS- Twin Anemia polycythemia sequence
    - TRAP- Twin Reverse Arterial Perfusion (aka Acardiac Twinning)
  - Staging- QUINTERO Staging:
    - Stage 4: 1 or both the babies develop hydrops
    - Stage 5: IUD in one or both the babies.

E. Diabetes Mellitus in Mother

- One Cause: Fetal hyperglycemia leading to fetal polyuria
- Other Cause: Fetal Anomalies
  - Risk of anomalies can be predicted by values of HbA1C
  - Level 2 USG b/w 18-22 weeks to pick up higher abnormalities
  - Pregestational diabetes (Not seen in gestational diabetes)
    - M/C CVS > NTD (M/C CVS abnormality is VSD)
    - Most Specific: Sacral agenesis

- DOC- Insulin (No OHAs)
- Macrosomia – because of hyperglycemia (Have a risk of Shoulder dystocia)
- TOP should be ≥ 39 weeks (never <39 weeks)
- CS if EBW ≥4.5 kgs

F. Fetal Bartter Syndrome (because of Polyuria)

G. Fetal Infections (all TORCH as all cause hydrops fetalis)

- Fetal Transmission increases as POG increases
- Severity of infection decreases as POG increases
- Rubella – CRS upto 16 weeks
  - Cataract, SNHL, CVS defects (specially PDA)
  - Bluebelly muffin rash (Non specific)
- Congenital Toxoplasmosis
  - Intracranial diffuse calcifications
  - Hydrocephalus
  - Chorioretinitis
- Congenital CMV
  - Periventricular calcifications
  - Microcephaly
  - SNHL
- Congenital Varicella syndrome (Not to be confused with Neonatal Varicella- infection from 5 days before to 2 days after delivery)
  - Highest risk b/w 13-20 weeks
  - Limb Hypoplasia, Cutaneous Scarring

H. Idiopathic

OLIGOHYDRAMNIOS

1. Early pregnancy

a) Chromosomal abnormalities

b) Fetal infections – more commonly produce polyhydramnios

c) Twin Twin transfusion syndrome

d) Gross congenital abnormalities (M/C Renal)

- Renal Agenesis, or obstruction of flow d/o like PUV
- Potter's Syndrome- Severe Oligohydramnios
  - Pulmonary hypoplasia
  - Limb deformities (Eg CTEV)
  - Flat Facies

2. 3rd Trimester Pregnancy

a) Rupture of Membranes

- Severe oligohydramnios
- Amniotic Band Sequence (Streeter's Syndrome)
  - Constriction rings
  - Limb defects
  - Craniofacial abnormalities

b) Uteroplacental insufficiencies

- Pre-eclampsia
- IUGR

c) Idiopathic

d) Post-term pregnancy

- Macrosomia
- Placental insufficiency
- Meconium Aspiration

e) PROM

- P/S (Best test)- Clear Fluid
- Other tests:
  - Nitrazine test
  - Fern Test (in PROM, Vaginal pH becomes alkaline)
  - Mx:
    - Antibiotics
    - Induce Labour if:
      - POG ≥ 34 weeks
      - Chorioamnionitis
      - Abruption
      - Cord prolapse
      - Non-reassuring FHR
    - Steroids (If POG < 34 weeks)